

C L A I M S

WHAT IS CLAIMED IS:

1. A tanned leather comprising:
an internal fiber matrix;
rare earth element and/or ceramic particles adapted to reflect, amplify and convert the wave lengths of infrared radiation incident upon the rare earth elements and/or ceramics, said rare earth element and/or ceramic particles being disposed and imbedded within the fiber matrix in a sufficient amount so that the rare earth elements and/or ceramics enhance the long wavelength infrared radiation of the leather when subjected to short wave infrared radiation from a human body or other source.
2. The leather of Claim 1 wherein the rare earth elements and/or ceramics include one or more of Erbium, Neodymium and Titanium.
3. The leather of Claim 1 wherein the amount of rare earth elements and/or ceramics in the leather is about 0.1% to 12% by weight.

4. The leather of Claim 1 further comprising a layer of phase change material added to at least one surface of the leather to provide thermal stability to the leather.

5. A tanned leather for use in a garment, footwear, glove, upholstery or other leather product, comprising:

a tanned leather having an internal fiber matrix;

a rare earth and/or ceramic particles bonded to the tanned leather so that the rare earth element and/or ceramic powders penetrates the internal fiber matrix and are trapped within the internal fiber matrix; and

the trapped rare earth element and/or ceramic powders in the tanned leather beneficially interact with the heat generated by a human to reflect and amplify infrared radiation from a human source and convert the infrared radiation from the human or other source from its short wavelength infrared radiation to long wavelength infrared radiation that penetrates deeper into human flesh, whereby the tanned leather is particularly suitable for use in garments, gloves, footwear, upholstery and other leather products coming in contact with human users.

6. A glove comprising:

a tanned leather having an internal fiber matrix;

rare earth elements and/or ceramics adapted to reflect, amplify and convert the wave lengths of infrared radiation incident upon the rare earth elements and/or ceramics, said rare earth elements and/or ceramics being disposed and imbedded within the fiber matrix in a sufficient amount so that the rare earth elements and/or ceramics enhance the long wavelength infrared radiation of the leather when subject to short wave infrared radiation from a human body or other source.

7. The glove of Claim 6 further comprising a phase changing material layer added on to at least one surface of the tanned leather so that the phase change material enhances the thermal stability of the leather when subject to heat or cold.

8. A garment comprising:

a tanned leather having an internal fiber matrix;

rare earth elements and/or ceramics adapted to reflect, amplify and convert the wave lengths of infrared radiation incident upon the rare earth elements and/or ceramics, said rare earth elements and/or ceramics being disposed and imbedded within

the fiber matrix in a sufficient amount so that the rare earth elements and/or ceramics enhance the long wavelength infrared radiation of the leather when subject to short wave infrared radiation from a human body or other source.

9. The garment of Claim 8 further comprising a phase changing material layer added on to at least one surface of the tanned leather so that the phase change material enhances the thermal stability of the leather when subject to heat or cold.

10. A shoe comprising:

a tanned leather having an internal fiber matrix;

rare earth elements and/or ceramics adapted to reflect, amplify and convert the wave lengths of infrared radiation incident upon the rare earth elements and/or ceramics, said rare earth elements and/or ceramics being disposed and imbedded within the fiber matrix in a sufficient amount so that the rare earth elements and/or ceramics enhance the long wavelength infrared radiation of the leather when subject to short wave infrared radiation from a human body or other source.

11. The shoe of Claim 10 further comprising a phase changing material layer added on to at least one surface of the tanned leather so that the phase change material enhances the thermal stability of the leather when subject to heat or cold.

12. An upholstery covering comprising:

a tanned leather having an internal fiber matrix;

rare earth elements and/or ceramics adapted to reflect, amplify and convert the wave lengths of infrared radiation incident upon the rare earth elements and/or ceramics, said rare earth elements and/or ceramics being disposed and imbedded within the fiber matrix in a sufficient amount so that the rare earth elements and/or ceramics enhance the long wavelength infrared radiation of the leather when subject to short wave infrared radiation from a human body or other source.

13. The upholstery covering of Claim 12 further comprising a phase changing material layer added on to at least one surface of the tanned leather so that the phase change material enhances the thermal stability of the leather when subject to heat or cold.

14. A process for inserting rare earth elements and/or ceramics into the fiber matrix of leather comprising:

converting pickled skins to wetblue state;

converting wetblue skins to leather suitable to receive rare earth minerals and/or ceramic powder;

adding rare earth minerals and/or ceramic powder; and

trapping the rare earth minerals and/or ceramic powder in the fiber matrix of the leather.

15. A beneficially interactive leather comprising:

a tanned leather and a surface coating of phase change materials which act as a temperature stabilizing material in a sufficient amount so that the phase change material enhances the thermal stability of the leather when subject to heat or cold.

16. The leather of Claim 15 wherein the phase change material includes capsulated microspheres of the phase change material in a paraffin carrier.